

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A self-powered fitness device to simulate various types of stepping motions, comprising:

a frame;

a guide movably associated with the frame;

a foot support for receiving a user's feet, the foot support being coupled to the guide;

a generator coupled to the foot support, the generator being actuated to produce electric power by the user's stepping motions acting on the foot support;

an electric energy storage medium coupled to the generator to store at least part of the power produced by the generator;

a lift system for selectively and automatically changing at least one of the elevation and the angular orientation of the guide relative to the frame, the lift system being powered by both the generator and the electric energy storage medium; and

a microprocessor coupled to the generator, the electric energy storage medium, and the lift system for coordinating their respective operations, the microprocessor being powered by the generator.

2. The device of Claim 1, wherein the generator comprises a three-phase AC generator.

3. The device of Claim 1, wherein the electric energy storage medium comprises a battery.

4. The device of Claim 1, further including a resistance controller for selectively adjusting the resistance applied to the foot support, the resistance controller being coupled to the microprocessor to maintain the resistance substantially constant regardless of whether the lift system is actuated or not.

5. The device of Claim 4, wherein the resistance controller selectively adjusts the resistance applied to the foot support as a function of a field current.

6. The device of Claim 1, wherein the electric energy storage medium is used to power the device for a predetermined period of time after the user stops pedaling.

7. The device of Claim 1, wherein the foot support comprises first and second foot supports for receiving the user's left and right feet, respectively.

8. The device of Claim 1, further comprising a display panel attached to the frame, the display panel being coupled to the microprocessor, wherein at least part of the power produced by the generator is not stored in the electric energy storage medium and is used to power the display panel.

9. A self-powered fitness device , comprising:
a frame;
an actuatable component associated with the frame;
an exercise input unit that translates exercise of a portion of a user's body into a predefined motive force;

a generator coupled to the exercise input unit, the generator being activated to produce electric power by the user's exercising motions via the exercise input unit;

an electric energy storage medium coupled to the generator to store at least part of the power generated by the generator; and

an actuator for selectively and automatically actuating the actuatable component, the actuator being powered by both the generator and the electric energy storage medium.

10. The device of Claim 9, wherein the actuatable component comprises a liftable guide.

11. The device of Claim 9, wherein the generator comprises a three-phase AC generator.

12. The device of Claim 9, wherein the electric energy storage medium comprises a battery.

13. The device of Claim 9, further including a resistance controller for selectively adjusting the resistance applied to the exercise input unit to be felt by the user,

the resistance controller being configured to maintain the resistance substantially constant regardless of whether the actuator is actuated or not.

14. The device of Claim 13, wherein the resistance controller selectively adjusts the resistance applied to the exercise input unit as a function of a field current.

15. The device of Claim 9, wherein the electric energy storage medium is used to power the device for a predetermined period of time after the user stops exercising.

16. A method of self-powering a fitness device, comprising:

providing a fitness device comprising a frame, an actuatable component associated with the frame, an exercise input unit that translates exercise of a portion of a user's body into a predefined motive force, a generator coupled to the exercise input unit, an electric energy storage medium coupled to the generator, and an actuator for selectively and automatically actuating the actuatable component;

allowing the user to exercise using the exercise input unit on the fitness device;

producing power via the generator based on the user's exercising motions;

storing at least part of the power generated by the generator in the electric energy storage medium; and

powering the actuator for the actuatable component with both the generator and the electric energy storage medium.

17. The method of Claim 16, wherein the fitness device comprises a self-powered fitness device to simulate various types of stepping motions, the actuatable component comprising a guide, the exercise input unit comprising at least one foot support, and the actuator comprising a lift system for selectively lifting the guide.

18. The method of Claim 16, wherein the electric energy storage medium comprises a battery.

19. The method of Claim 16, wherein the step of powering the actuator further comprises maintaining the resistance applied to the exercise input unit substantially the same as the resistance applied to the exercise input unit when the actuator is not being powered.

20. The method of Claim 16, further comprising the step of powering the device with the electric energy storage medium for a predetermined period of time after the user stops exercising.

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